3. (Amended) A method of identifying an agent suitable for treating a cow suspected of being at risk for having osteoarthritis, comprising:

comparing the rate of ATP synthesis in one or more biological samples obtained from the subject in the presence and absence of a candidate agent, wherein an altered rate of ATP synthesis indicates that the agent alters mitochondrial function; and therefrom determining the suitability of said candidate agent for treating osteoarthritis.

a1

4. (Amended) A method of determining the suitability of an agent for treating a cow suspected of being at risk for having osteoarthritis, comprising:

comparing the rate of ATP synthesis in a biological sample obtained from the subject before and after administering to said subject a candidate agent, wherein an altered rate of ATP synthesis indicates that the agent alters mitochondrial function; and therefrom determining the suitability of said candidate agent for treating osteoarthritis.

5. (Amended) A method of determining the suitability of an agent for treating a cow suspected of being at risk for having osteoarthritis, comprising:

comparing the rate of ATP synthesis in at least one biological sample obtained from a plurality of subjects before and after administering to each of said subjects a candidate agent, wherein an altered rate of ATP synthesis indicates that the agent alters mitochondrial function; and therefrom determining the suitability of said candidate agent for treating osteoarthritis.

a2

11. (Amended) The method of any one of claims 3-5 wherein the biological sample comprises a cell selected from the group consisting of a chondrocyte and a hematopoietic cell.

a3

15. (Amended) The method of any one of claims 3-5 wherein the biological sample comprises an articular chondrocyte and the step of comparing comprises comparing the rate of ATP synthesis in the absence and presence of transforming growth factor-beta.